AMENDMENTS TO THE SPECIFICATION

Please amend the identified paragraphs of the specification as follows where added text is indicated by underlining, and deleted text is indicated by ~~strikethrough~~. Changes are identified by a vertical bar in the margin.

Please amend the paragraph at page 5 line 16 through page 6 line 18 as follows:

Semiconductor manufacturing facilities generally use some version of the following complex overlay procedure to help determine the magnitude of lens distortion independent of other sources of systematic overlay error. The technique has been simplified for illustration. *See* Analysis of image field placement deviations of a 5x microlithographic reduction lens, D. MacMillen, et al., SPIE Vol. 334, 78:89, 1982. Figures 2 and 3 show typical sets of overlay targets 300, including – one large or outer box 302 and one small or inner target box 304. Figure 1 shows a typical portion of a distortion test reticle 102 used in the prior art. It should be noted that the chrome target patterns on most reticles are 4 or 5 times larger as compared with the patterns they produce at the image plane, this simply means modern steppers are reduction systems. Further, for purposes of discussion, it is assumed that the reticle pattern is geometrically perfect, (in practice, the absolute positions of features on the reticle can be measured and the resulting errors subtracted off). First, a wafer covered with photoresist is loaded onto the wafer stage and globally aligned. Next, the full-field image of the reticle, 102 in Figure 1 is exposed onto the resist-coated wafer 2102 in Figure 21. For purposes of illustration, we assume that the distortion test reticle consists of a 5 x 5 array of outer boxes evenly spaced a distance M*P, across the reticle surface see Figure 1. It is typically

assumed that the center of the optical system is virtually aberration free. *See* Analysis of image field placement deviations of a 5x microlithographic reduction lens, *supra*. With this assumption, the reticle, 102 in Figure 1 is now partially covered using the reticle blades, 1704 in Figure 17, in such a way that only a single target at the center of the reticle field, box 104, in Figure 1, is available for exposure. Next, the wafer stage is moved in such a way as to align the center of the reticle pattern directly over the upper left hand corner of the printed 5 x 5 outer box array, wafer position ~~2100~~2106, Figure 21. The stepper then exposes the image of the small target box onto the resist-coated wafer. If the stepper stage and optical system were truly perfect then the image of the small target box would fit perfectly inside the image of the larger target box, as illustrated in Figures 4, and 21, from the previous exposure.

Please amend the paragraph at page 15 line 13 through line 24 as follows:

A simple and accurate methodology that allows for the extraction of lens distortion placement error excluding total translation, rotation, orthogonality and x and y scale error and is mathematically decoupled from stage error is described. Figure 34 illustrates the methodology in terms of a process flow diagram. First, in block 3402, a wafer is provided; wafer alignment marks are not required, a bare wafer can be used. Next, in block ~~3402~~3404, the wafer is coated with resist and loaded onto the projection imaging system or machine. Then in block 3406, a reticle pattern such as illustrated in Figure 20, including a two dimensional array of box structures or targets of various sizes, see Figure 20A, is loaded into the machine's reticle management system and aligned to

the reticle table. The reticle pattern can be, for example, an Nx x Ny array of overlay groups as shown in Figure 20A with a portion of the whole Nx x Ny array being schematically shown in Figure 20.

Please amend the paragraph at page 37 line 8 through line 21 as follows:

Figure 42 is a schematic of four overlay groups 4202, 4204, 4206, 4208 located at the lower left corner of reticle 3802 enclosed by a dashed line 3810 in Figure 38. The overlay groups shown in Figure 42 are the bar in bar overlay group shown in Figure 39 that includes one outer box pattern and two inner bar patterns. The four overlay groups 4202, 4204, 4206, and 4208 include numeration "1,1", "2,1", "1,2", and "2,2" respectively corresponding to the overlay group's location on the reticle. Figure 43 is a schematic of four overlay groups ~~43202~~4302, 4304, 4306, 4308 located at the lower left corner of reticle 3802 enclosed by a dashed line 3810 in Figure 38. The overlay groups shown in Figure 43 are the bar in bar overlay group shown in Figure 40 that includes two outer box patterns and two inner bar patterns. Figure 44 is a schematic of four overlay groups 4402, 4404, 4406, 4408 located at the lower left corner of reticle 3802 enclosed by a dashed line 3810 in Figure 38. The overlay groups shown in Figure 44 are the overlay groups shown in Figure 4 that includes WAMs. In Figure 44 each of the WAMS, as illustrated in Figure 41, are represented by a single "cross" pattern for clarity